Bryan J. Vogel (*pro hac vice*)
BVogel@RobinsKaplan.com
Danielle S. Rosenthal (*pro hac vice*)
Drosenthal@RobinsKaplan.com
Jason C. Williams (*pro hac vice*)
Jwilliams@RobinsKaplan.com
ROBINS KAPLAN LLP
399 Park Avenue, Suite 3600
New York, NY 10022-4690
Tel.: (212) 980-7400
Fax: (212) 980-7499

Li Zhu (Bar No. 302210)
LZhu@RobinsKaplan.com
ROBINS KAPLAN LLP
2440 W El Camino Real, Suite 100
Mountain View, CA 94040
Tel.: (650) 784-4040
Fax: (650) 784-4041

Attorneys for Plaintiff Celgard, LLC

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
OAKLAND DIVISION

CELGARD, LLC,

PLAINTIFF,

V.

SHENZHEN SENIOR TECHNOLOGY MATERIAL CO. LTD. (US) RESEARCH INSTITUTE, SUN TOWN TECHNOLOGY, INC., FARASIS ENERGY USA, INC., FARASIS ENERGY, INC., FARASIS ENERGY (GAN ZHOU), INC., FARASIS ENERGY (GAN ZHOU) CO., LTD., GLOBAL VENTURE DEVELOPMENT, LLC, AND GLOBAL VENTURE DEVELOPMENT, INC.,

DEFENDANTS.

Case No. 4:19-cv-5784-JST

THIRD AMENDED COMPLAINT FOR:

1. **PATENT INFRINGEMENT IN VIOLATION OF 35 U.S.C. § 271 AGAINST EACH NAMED DEFENDANT**
2. **BREACH OF CONTRACT AGAINST FARASIS ENERGY (GAN ZHOU), INC.**
3. **BREACH OF IMPLIED COVENANT OF GOOD FAITH AND FAIR DEALING AGAINST FARASIS ENERGY (GAN ZHOU), INC.**

DEMAND FOR JURY TRIAL

Plaintiff Celgard, LLC ("Celgard") files this Complaint against Defendants Shenzhen Senior Technology Material Co. Ltd. (US) Research Institute ("Senior-California"), Sun Town Technology ("Sun Town"), Farasis Energy USA, Inc., Farasis Energy, Inc. (collectively, "Farasis-US"), Farasis Energy (Gan Zhou), Inc., and Farasis Energy (Gan Zhou) Co., Ltd. (collectively, "Farasis-China") (all four Farasis entities, collectively, as "Farasis"), Global Venture Development, LLC, and Global Venture Development, Inc. (collectively, "Global Venture") (collectively, "Defendants") and alleges as follows:

NATURE OF THE ACTION

1. This lawsuit concerns the brazen infringement of Celgard's patents by Defendants, as well as Defendant Farasis Energy (Gan Zhou), Inc.'s breach of a supply agreement with Celgard and breach of the implied covenant of good faith and fair dealing so that Farasis Energy (Gan Zhou), Inc. could enter into an agreement with Celgard's Chinese competitor for the supply of infringing product.

2. Celgard, a U.S. manufacturer, located in Charlotte, North Carolina, has invested hundreds of millions of dollars into research and development for new battery technologies and is an innovator in both coated and uncoated separators used in lithium-ion batteries. Through years of investment, Celgard has worked hard to become a global leader in the development and manufacture of separators used in lithium-ion batteries for consumer electronic ("CE") devices and electric vehicles ("EVs"). Celgard makes products in North Carolina, has facilities around the world, and ships products globally.

3. In the past 20 years, rechargeable lithium-ion batteries became very popular for use in varying applications. Lithium-ion batteries provide a power source with a higher energy density, longer cycle life, and higher operational voltages with a relatively small size and light weight, as compared to other rechargeable batteries. Separators are thin electrically insulating sheets used in batteries, and they sit between a battery's electrodes—the anode and the cathode. The separator is typically microporous to allow for ionic conduction (of lithium ions) while preventing direct physical contact and electrical connection between the electrodes of the battery. Separators are critical because the touching of the two electrodes typically results in a major electrical "short"

of the cell and possibly in catastrophic failure such as fire or explosion.

4. Celgard has a broad portfolio of highly engineered products used in this industry and is one of the largest suppliers of separators to the lithium-ion battery industry. Celgard's separators are widely used in lithium-ion batteries for EVs, energy storage systems, power tools, and CE devices, such as notebook computers, mobile telephones, and tablets. EVs include both hybrid EVs, like the Toyota Prius, and full-EVs like Teslas. Celgard's work in the lithium-ion battery industry has been highly praised, and Celgard has received numerous accolades for its work in the lithium-ion battery industry. Celgard's work in EVs in particular has been praised by numerous high-ranking officials, including former President Obama, former Secretary of Energy, Steven Chu, and former Secretary of Labor, Hilda Solis.

5. Such innovation is costly. Celgard has invested hundreds of millions of dollars to innovate its separators over the course of more than 30 years—through painstakingly long trial and error, improving each step of each process, each component of each composition, and even developing components of machinery used for the making of separators.

6. Celgard's significant investment requires protection, for example, of Celgard's patents. Celgard has diligently pursued and procured intellectual property rights both in the United States and internationally. Celgard owns more than 200 United States and international patents. Celgard invented a new separator for use in batteries and patented its inventions in United States Reissued Patent RE47,520 (the "'520 patent"), formerly United States Patent 6,432,586, entitled "Separator for a High Energy Rechargeable Lithium Battery." The '520 patent describes and claims a separator for a high-energy rechargeable lithium battery that addresses the significant problem of dendrite growth (irregular growth of lithium metal when it is plated onto an electrode during the charging of a battery between electrodes), as well as other problems. The '520 patent is recognized as being foundational in the separator field and has been cited in over 50 patents and patent applications; it expired in April 2020. Celgard also owns United States Patent No. 6,692,867 ("the '867 patent"), entitled "Battery Separator-Pin Removal" that is asserted in this action (collectively, the '520 patent and the '867 patent make up "the Asserted Patents"). A true and correct copy of the '520 patent is attached hereto as **Exhibit A**. A true and correct copy of the

'867 patent is attached hereto as **Exhibit B**.

7. Celgard's investment and protection of its investment has resulted in separators used in lithium-ion batteries that are safe and efficient and have undergone vigorous testing and optimization processes. As a result of its significant investment in developing its intellectual property, Celgard has become one of the top suppliers of separators for lithium-ion batteries in the world.

8. Shenzhen Senior Technology Material Co. Ltd. ("Senior-China"), a Chinese manufacturer of separators, together with its agents, alter-egos and/or related entities Senior-California, Sun Town and Global Venture (collectively, "Senior") has avoided the time-consuming and expensive process of developing its own separator technology and instead manufactures infringing separators.

9. Senior embarked on a scheme to take over the global separator market with an intent to eclipse Celgard. Their strategy was not based on fair competition, independent research and development, or their own advances in technology. Instead, Senior's strategy was to build a suite of products through unlawful theft and use of Celgard's intellectual property.

10. Senior accomplished its scheme by, among other things, hiring one of Celgard's lead scientists from North Carolina in October, 2016, Dr. Xiaomin (Steven) Zhang, who became an expert on separator membranes, resins, and production, over the course of more than a decade at Celgard.

11. When Dr. Zhang joined Senior, he assumed a pseudo-name in China, Dr. Bin Wang, so that Celgard would not be able to locate him. While at Senior, Dr. Zhang has used and continues to use Celgard's intellectual property to help Senior create infringing separators, such as coated and uncoated separators.

12. Dr. Zhang has been working for Senior in some capacity, through Senior-China, Senior-California, Sun Town, and/or Global Venture at least as early as his departure from Celgard in 2016. Dr. Zhang and Senior (through one or more of the named entities) planned for Dr. Zhang to leave Celgard and work for Senior to create separators for Senior that had properties similar or the same as Celgard separators and with the intent to take away business from Celgard.

13. Senior (including the named entities) is using Celgard's intellectual property to develop, make, use, import, offer to sell, and/or sell infringing separators. Farasis-US and Farasis-China assist and infringe Celgard's patents by incorporating the infringing separators into their lithium-ion batteries for sale in the United States and throughout the world.

14. Farasis (including each named entity) is a developer and supplier of lithium-ion battery technologies for a range of markets, including transportation, electric grid, and commercial and industrial vehicles.[1] Farasis knowingly incorporates Senior's infringing separators into its lithium-ion batteries and perpetuates the harm to Celgard by selling its lithium-ion batteries to its customers, such as Zero Motorcycles, Inc. ("Zero Motorcycles"). Accordingly, Farasis-US and Farasis-China assist and infringe Celgard's patents by incorporating the infringing separators into their lithium-ion batteries for sale in the United States and throughout the world.

15. Senior and Farasis have conspired to harm Celgard. At least Farasis Energy (Gan Zhou), Inc., Farasis Energy Inc., and Celgard previously had a long-standing business relationship together, with Celgard supplying its separators to Farasis' lithium-ion batteries.

16. Specifically, Celgard and Farasis Energy (Gan Zhou), Inc. had a supply agreement for Celgard to supply its separators to at least Farasis Energy (Gan Zhou), Inc., which was effective through March 31, 2019. In January 2019, during the term of the 2018 Supply Agreement, Farasis Energy (Gan Zhou), Inc. told Celgard it was ceasing purchases from Celgard, it refused to pay for specialized separator already made for it, and announced it was going to purchase Senior-China's separators instead.

17. In January, 2019, Farasis Energy (Gan Zhou), Inc. and Senior-China entered into an arrangement for the supply of Senior-China's infringing separators. The result of this new arrangement with Senior-China was a breach of the 2018 Supply Agreement with Celgard.

18. As a result of Senior-China and Farasis Energy (Gan Zhou), Inc.'s conduct in replacing Celgard as the separator supplier, Celgard lost millions of business per year from Farasis Energy (Gan Zhou), Inc. and lost a then-valuable supply relationship. Further, Farasis was now

[1] This is supported by Farasis' website, http://www.farasis.com/en/who-are-we.html (last accessed on July 29, 2020), attached hereto as **Exhibit O**.

using infringing separators in its products, such that Farasis was now infringing and continues to infringe Celgard's patents, causing Celgard additional significant harm and providing Celgard's direct competitor with an economic and marketplace advantage.

19. Accordingly, Celgard has suffered and will continue to suffer great harm if Senior and Farasis are allowed to continue infringing Celgard's patents.

THE PARTIES

20. Celgard repeats and incorporates by reference all prior allegations of this Complaint as if fully set forth herein.

21. Celgard is a limited liability company organized and existing under the laws of Delaware, with its principal place of business located in Charlotte, North Carolina. Celgard is directly owned by Polypore International, LP, which is headquartered in Charlotte, North Carolina, and is indirectly owned by Asahi Kasei Corporation, which is headquartered in Japan.

22. Celgard is a U.S. manufacturer, has a broad portfolio of highly engineered products used in the battery industry, and is one of the largest suppliers of separators to the lithium-ion battery industry. Celgard has grown to be a global leader in the development and production of specialty microporous membranes, including separators used in rechargeable or secondary lithium-ion batteries for CE devices and EVs.

23. Senior-California is incorporated in the State of California, is registered to do business in the State of California, and has an office and research and development facility in the State of California, located at 44049 Fremont Blvd., Fremont, California, 94538.

24. Sun Town is incorporated in the State of California, is registered to do business in the State of California, and has an office located at 44063 Fremont Blvd., Fremont, California, 94538.

25. At least as late as May 16, 2019, Sun Town was selling or offering to sell Senior-China's infringing separators to at least Celgard's consultant in California.

26. Global Venture Development, Inc. is incorporated in the State of California, is registered to do business in the State of California, and also has an office located at 44063 Fremont Blvd., Fremont, California, 94538.

27. Global Venture Development, LLC is a limited liability company organized and existing under the laws of the State of California, is registered to do business in the State of California, and also has an office located at 44063 Fremont Blvd., Fremont, California, 94538.

28. Senior-China, Senior-California, Sun Town, Global Venture, and Dr. Zhang are conspiring together to develop, make, use, import, offer to sell, and/or sell the accused infringing products, including coated separators and uncoated separators that are manufactured by Senior-China to companies and institutions throughout the United States, including California. For example:

a. Dr. Zhang—the former Celgard employee who absconded with Celgard's technology and proprietary information—is currently Chief Technology Officer of Senior-China, and had an address at the same location as Senior-California. Specifically, from April 2019 until August 2019, Dr. Zhang was located at 44063 Fremont Boulevard, Fremont, CA 94538.

b. Dr. Zhang's listed phone number (510-573-6021) and business address (44063 Fremont Boulevard) are the same as those for Global Venture.

c. Sun Town and Global Venture are located at the same address as Dr. Zhang and are in the same building as Senior-California.

d. Sun Town and Global Venture have connections with Senior-China and with Senior-California and are companies to which Senior-California's assets have been transferred.

e. Sun Town lists Mei-Guang Chen as its Finance Manager on its Statement of Information filed with California's Secretary of State. Mei-Guang Chen also is Finance Manager for Senior-California.

f. Senior-China's website says it has set up a Research and Development center in California and lists a telephone number for Senior-California. When this number is called, a pre-recorded message plays, saying "Hello, and thank you for calling Sun Town Technology."

g. Sun Town's Chief Executive Officer is Jian Chen. Jian Chen is also a director of

other entities located at the same location as Global Venture, Senior-California, and Dr. Zhang, such as Global PC Direct, GRJS LLC, and ST Cyberlink, also known as Global PC Direct.

h. Senior-China's annual reports from the Shenzhen Stock Exchange show that Senior-China set up Senior-California in January 2017 (around the time Dr. Zhang defected from Celgard) with registered capital of $1M. The registered business nature of Senior-California is research and development and sales. The 2018 report shows that Senior-China invested approximately $900 K to Senior-California.

i. Senior-California began dissolving in 2019. Prior to dissolving, Senior-California transferred its assets to Global Venture and Sun Town for the purpose of Global Venture and Sun Town developing, making, using, importing, offering to sell and/or selling Senior-China's infringing separators throughout the United States, including California.

29. Based on at least the above, Sun Town, Global Venture and Senior-California are agents of Senior-China, affiliates of one another, and/or alter egos of one another.

30. Celgard respectfully submits that the factual allegations set forth herein concerning the relationships between Defendants have evidentiary support or will likely have evidentiary support after a reasonable opportunity for further investigation or discovery.

31. Farasis Energy USA, Inc. is incorporated in the State of California, is registered to do business in the State of California, and has an office located at 21363 Cabot Blvd., Hayward, California, 94545.

32. Farasis Energy, Inc. is incorporated in the State of California, is registered to do business in the State of California, and has an office located at 2118 Arthur Avenue, Belmont, California, 94002.

33. Farasis Energy (Gan Zhou), Inc. is a corporation organized and existing under the laws of China, with its principal place of business in Ganzhou, Jiangxi, China.

34. Farasis Energy (Gan Zhou), Co., Ltd. is a corporation organized and existing under the laws of China, with its principal place of business in Ganzhou, Jiangxi, China.

35. Farasis Energy (Gan Zhou), Inc. was renamed Farasis Energy (Gan Zhou) Co. Ltd. during the past year.

36. Farasis Energy, Inc. and Farasis Energy USA, Inc. are the U.S. subsidiaries of Farasis Energy (Gan Zhou), Inc./Farasis Energy (Gan Zhou), Co., Ltd, respectively.

37. According to its website, Farasis Energy (Gan Zhou), Inc./Farasis Energy (Gan Zhou), Co., Ltd. state that it has an R&D center in Silicon Valley, US. In addition, the website states that Farasis Energy USA, Inc. was established in Silicon Valley, US in 2002.[2]

38. Farasis-US and Farasis-China share senior personnel, for example, Dr. Yu Wang and Dr. Keith Kepler.

39. Dr. Keith Kepler is the Chief Technology Officer for Farasis Energy Inc. and is a controller, director, and member of the Board of Directors of Farasis Energy (Gan Zhou), Co., Ltd.

40. Dr. Kepler is also a director of Farasis Energy (Gan Zhou), Inc.

41. Dr. Yu Wang is the Chief Executive Officer of Farasis Energy, Inc. and the Chairman of the Board of Directors of Farasis Energy (Gan Zhou), Inc.

42. Each Farasis entity is a developer and supplier of lithium-ion batteries for a range of markets, including transportation, electric grid, and commercial and industrial vehicles.[3]

43. Each Farasis entity knowingly incorporates Senior's infringing separators into its lithium-ion batteries, and perpetuates the harm to Celgard by providing these products to its customers, such as Zero Motorcycles.

44. Farasis does not make public or readily available any specific names or model numbers of its lithium-ion batteries.[4] Indeed, Farasis' website does not list any specific products, much less any model numbers or specific names of its products. However, a recently purchased

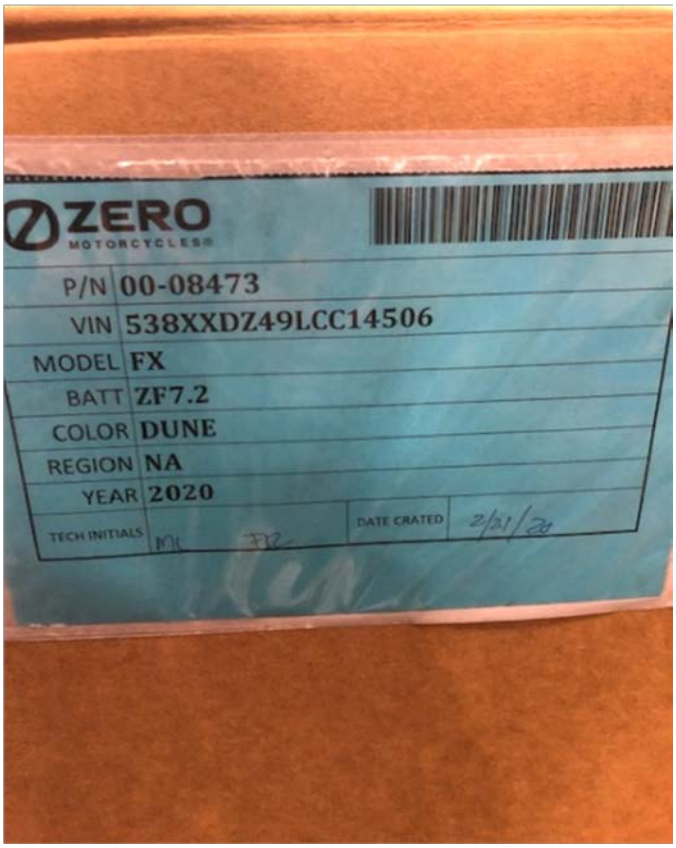
[2] *See* http://www.farasis.com/en/who-are-we.html (last accessed on July 29, 2020), attached hereto as **Exhibit O**.

[3] *See* http://www.farasis.com/en/who-are-we.html (last accessed on July 29, 2020), attached hereto as **Exhibit O**.

[4] However, Farasis' website in 2012 listed several lithium-ion batteries identified by the following part numbers, such as IMR-18650-P11, IMR-18650-P15, IMR-18650-P20, IMR-18650-P22, IMR-18650-P24. *See* web.archive.org/web/20120618061338/http://www.farasis.com/productdetail.html (last accessed on July 29, 2020), attached hereto as **Exhibit P**. Also, a datasheet from 2011 and 2018 reveals an additional lithium-ion battery, as Cell Type: IMP06160230P25A used in Farasis battery packs for Zero Motorcycles in the U.S. **Exhibit Q**.

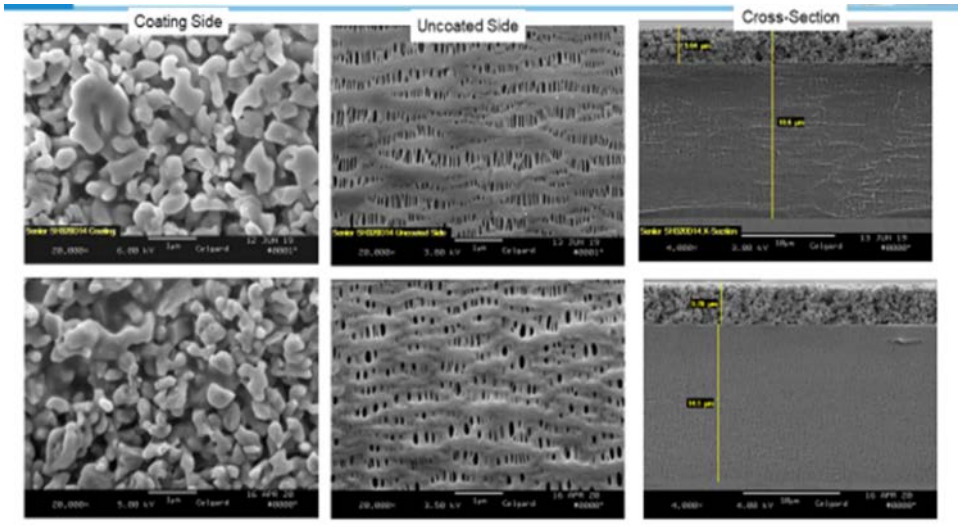
Zero Motorcycles' motorcycle in the United States confirms that it includes a Farasis lithium-ion battery and that the Farasis lithium-ion battery includes a Senior separator.

45. For example, a 2020 motorcycle by Zero Motorcycles, identified as model FX contains a Farasis lithium-ion battery, identified as ZF7.2:



46. As can be seen from the below photograph of the label of the lithium-ion battery in this motorcycle, the label states that it is "designed by Farasis Energy & Zero Motorcycles in California, USA" and that it is made by "Farasis Energy (Gan Zhou) in China." The Farasis lithium-ion battery is further identified as "FEI Part No. PCM102064-D01."

47. Although the separator located in the Farasis lithium-ion battery contains no identifier or model number, Celgard's testing of the separator reveals that it is a Senior ceramic coated separator containing polypropylene. For example, the Scanning Electron Microscope ("SEM") images below compare Senior's SH320D14 infringing separator (top row) to the separator inside the Farasis lithium-ion battery, FEI Part No. PCM102064-D01 (bottom row). Based on a comparison of at least these SEM images, the Farasis lithium-ion battery in Zero Motorcycles' motorcycle contains an infringing Senior separator. Additional comparisons of the separator in this Zero Motorcycles' motorcycle to Senior's separators and Celgard's separators further demonstrate that the separator in the Zero Motorcycles' motorcycle is an infringing Senior separator.



48. Additional evidence that the Farasis Defendants include and incorporate Senior infringing separators in their lithium-ion batteries is the supply agreement between Farasis Energy (Gan Zhou), Inc. and Senior-China to use Senior-China's infringing separators in Farasis Energy USA, Inc.'s and Farasis Energy Inc.'s lithium-ion batteries.

49. Indeed, the Senior and Farasis relationship is well-known with one article stating: "Senior Technology's key domestic clients include lithium battery manufacturers Farasis Energy and Guoxuan High-Tech Power Energy." **Exhibit R**.

50. Accordingly, each Farasis Defendant infringes Celgard's patents because it develops, makes, uses, imports, offers to sell, and sells lithium-ion batteries, such as the one in Zero Motorcycles' motorcycle, identified as ZF7.2 and FEI Part No. PCM102064-D01, that include infringing Senior separators as identified above, to companies and institutions throughout the United States, including the State of California.

51. Additionally, the lithium-ion batteries and separators used in the lithium-ion batteries often do not have specific names or model numbers because they are not off-the-shelf products. Instead, as discussed below, the separator manufacturer, such as Senior-China, collaborates with the battery manufacturer, such as Farasis, and the vehicle manufacturer, such as Zero Motorcycles, to design a separator and lithium-ion battery specifically for the vehicle manufacturer based on their requirements. The label of the lithium-ion battery in the photograph above illustrates this point, stating that the Farasis battery was "designed by Farasis Energy & Zero Motorcycles in California, USA."

52. As Farasis-China and Farasis-US share Dr. Yu Wang and Dr. Keith Kepler, both Dr. Yu Wang and Dr. Keith Kepler (and thereby both Farasis-China and Farasis-US) knew details on the infringing Senior separators, their use by Farasis, the lithium-ion batteries they were used to manufacture, the battery customers, and the like.

53. Also, based on importation records, Farasis Energy (Gan Zhou), Co., Ltd. for example, in early 2020, shipped 25,940 lbs and 600 cartons of lithium-ion batteries to Farasis Energy USA, Inc. in California. **Exhibit C**. Similarly in June 2019, Farasis Energy (Gan Zhou), Inc. shipped 25,355 lbs and 600 cartons of lithium-ion batteries to Farasis Energy, Inc. in California.

Exhibit D.

54. Farasis Energy (Gan Zhou), Inc. has also shipped 53,306 lbs and 600 cartons of its lithium-ion batteries directly to Zero Motorcycles at its headquarters in Scotts Valley, California. **Exhibit E.**

55. Senior sampled and qualified the infringing separators with Farasis-US (the Farasis R&D facility).

56. Senior employees also visited the Farasis-China manufacturing facilities where the infringing Senior separators are used to make lithium-ion cells or batteries.

57. Senior used Senior-California, Global Venture, and/or Sun Town's resources to visit Farasis-US facilities and to participate in meetings in the United States with Farasis, as well as BYD, Saft America, Inc., Zero Motorcycles, LG Chem, and the like.

58. Senior's US R&D is in Fremont, CA (city of Senior-California, Sun Town, and Global Venture) and Farasis's US R&D is in Hayward, CA (Farasis-US), which are in close proximity to each other.

59. Senior's Director of Sales and Marketing (based in Fremont, CA) attended the Advanced Automotive Battery Conference (AABC) and/or the International Battery Seminar & Exhibit in the US in 2019.

JURISDICTION AND VENUE

60. Celgard repeats and incorporates by reference all prior allegations of this Complaint as if fully set forth herein.

61. This Court has subject matter jurisdiction of the action pursuant to the patent laws of the United States, 35 U.S.C. § 1 *et seq.* and pursuant to 28 U.S.C. §§ 1331 and 1338(a) because Celgard's claims against each Defendant for patent infringement is a federal question. This Court also has supplemental jurisdiction over the other claims pursuant to 28 U.S.C. § 1367 because they are so related to the original claim that they form part of the same case or controversy.

62. This Court has personal jurisdiction over Global Venture, Sun Town, Senior-California, and Farasis-US because each is a California company, registered to business in California, with a principal place of business in this State and District.

63. This Court has personal jurisdiction over the Farasis-China Defendants pursuant to the United States Constitution, the California long-arm statute (i.e. California Code of Civil Procedure § 410.10), and/or Federal Rule of Civil Procedure 4(k)(2) (based off of Farasis-China's contacts with the United States as a whole), and/or any other applicable law.

64. Each Farasis-China Defendant has purposely directed activities in the United States, including California, and continues to purposefully direct activities in the United States, including California, by regularly doing or soliciting business and engaging in other persistent, systematic courses of conduct and by knowingly injecting its infringing products into the stream of commerce with the knowledge and intent that those products will ultimately be imported into the United States and sold to, offered for sale to, and/or used by customers in California and throughout the United States.

65. For example, each named Farasis-China Defendant is in the business of developing, making, using, importing, offering to sell, and/or selling lithium-ion batteries in the United States, including California, that include the infringing separators.

66. Specifically, based on importation records, Farasis Energy (Gan Zhou), Co., Ltd. for example, in January 2020 shipped 25,940 lbs and 600 cartons of its lithium-ion batteries directly to Farasis Energy USA, Inc. in California. **Exhibit C**. Similarly, in June 2019, Farasis Energy (Gan Zhou), Inc. shipped 25,355 lbs and 600 cartons of lithium-ion batteries directly to Farasis Energy, Inc. in California. **Exhibit D.**

67. Farasis-China's batteries either already have the infringing separator or the infringing separator is added by Farasis-US in California.

68. Additionally, based on Farasis-China's Initial Public Offering document, Farasis-China has received thousands of dollars in revenue from Farasis-US during at least 2016-2019, confirming Farasis-US sales in California.

69. Additionally, Farasis-US, located in California, is the R&D facility and U.S. sales facility for Farasis-China.

70. Additionally, Farasis-US and Farasis-China have overlapping senior personnel, such as Dr. Yu Wang and Dr. Keith Kepler.

71. Additionally, Farasis' lithium-ion batteries with the infringing Senior separators are included in at least Zero Motorcycles' motorcycles, electric motorcycles that are sold throughout the United States, including in California. Zero Motorcycles' headquarters is located in Scotts Valley, California.

72. Senior sampled and qualified the infringing separators with Farasis-US (the Farasis R&D facility).

73. Additionally, based on publicly available importation records, Farasis Energy (Gan Zhou), Inc. has shipped 53,306 lbs and 600 cartons of its lithium-ion batteries containing the Senior infringing separators, directly to Zero Motorcycles at its headquarters in Scotts Valley, California. **Exhibit E.** Farasis-China therefore knew or reasonably could have foreseen that a termination point of the infringing products would or could be the United States and California specifically.

74. To the extent that Farasis-China is not subject to personal jurisdiction in this or any other state's courts of general jurisdiction, this Court has personal jurisdiction over Farasis-China pursuant to Federal Rule of Civil Procedure 4(k)(2) based on Farasis-China's contacts with the United States as a whole, including its sales of its products throughout the United States and its supply contracts with Celgard, Senior-China, and downstream customers to supply products and sell products throughout the United States. For example, Farasis-China sells its batteries that include infringing separators to at least Zero Motorcycles, that are sold throughout the United States, including in California.

75. Venue is proper in this judicial district pursuant to 28 U.S.C. §§ 1391(b)-(c) and 1400(b) because each Defendant has committed acts of patent infringement complained of herein in this District, and thus a substantial part of the events or omissions giving rise to the claims alleged herein occurred in this District, and because Defendants are each subject to this Court's personal jurisdiction with respect to the claims alleged herein. Further, Farasis Energy (Gan Zhou), Inc. and Farasis Energy (Gan Zhou), Co., Ltd. are Chinese (foreign) corporations and not residents in the United States and may be sued in any judicial district under 28 U.S.C. § 1391(c)(3). And, pursuant to 28 U.S.C. §1400(b), Sun Town, Global Venture, and Farasis-US reside in California, have committed acts of infringement, and each have a regular and established place of business in this

District.

FACTUAL ALLEGATIONS

A. Celgard and its Technology

76. Celgard repeats and incorporates by reference all prior allegations of this Complaint as if fully set forth herein.

77. Celgard has a broad portfolio of highly engineered separators, including those that practice Celgard's patents, and is one of the largest suppliers of separators to the lithium-ion battery industry. Celgard has invested hundreds of millions of dollars into research and development for new battery separator technologies and is an innovator in both coated and uncoated separators.

78. Celgard long has been recognized as a leading innovator in the battery separator market. Celgard's technology, its reputation, its market leadership, and its customer loyalty comprise a significant portion of Celgard's value.

79. Celgard's customers are predominantly companies that supply batteries (whether individual cells, modules, or battery packs) to manufacturers that produce CE devices, EVs, and energy storage systems, such as Farasis. EVs include both hybrid-EVs, like the Toyota Prius, and full-EVs, like Teslas.

80. In the past 20 years, rechargeable lithium-ion batteries became very popular for use in varying applications. Lithium-ion batteries provide a power source with a higher energy density, longer cycle life, and higher operational voltages with a relatively small size and light weight, as compared to other rechargeable batteries.

81. Lithium-ion batteries are typically constructed with a thin porous insulating film (the separator) that allows the battery to operate but prevents the electrodes (cathode and anode) from contacting each other. Liquid electrolyte fills the pores in the separator and voids in the electrodes. When the battery is discharged, positively charged lithium ions flow in the electrolyte from the anode, through the separator pores, to the cathode. This process leaves a negative charge of electrons on the anode. When charging, the flow is reversed. In a rechargeable (secondary) lithium battery, the charge and discharge states are repeated during use. The process of charging and discharging the battery is referred to as one cycle.

82. A typical lithium-ion battery cell includes a positive electrode and a negative electrode that is divided by a separator or film, with the electrodes typically being made of compatible metal materials. The electrodes and film are often soaked in (and reside in) a liquid or liquid-like electrolyte. Lithium ions move through the electrolyte between the two electrodes when the battery is discharging its energy (e.g., when the battery is plugged into a device and energizing the device) and also when the battery is charging (e.g., when the battery is plugged into a charging station). The separator prevents direct contact between the electrodes. This is critical because the touching of the two electrodes typically results in a "short" of the cell and possibly in catastrophic failure such as fire or explosion. Therefore, by providing a physical barrier between the electrodes, the separator facilitates safety and continued operation of the battery.

83. Separators made of various materials have been used over the years. As batteries have become more sophisticated, separator function also has become more demanding and complex.

84. Lithium-ion batteries present certain unique safety challenges due to their chemical design and composition. One such challenge is lithium dendrite growth—the irregular growth of a metal on an electrode during charging or discharging. Over repetitive charge-discharge cycles, dendrites may grow out from the electrode's surface in a needle-like structure. As the battery is cycled further, the dendrites may continue to grow, penetrating the separator and making direct, physical and electrical contact with the opposite electrode. When such contact is made, an electrical short circuit of the battery may occur. This may cause the battery to malfunction. In certain scenarios, it may cause the battery's internal temperature to rise quickly and uncontrollably, leading to thermal runaway and catastrophic failure.

85. The battery industry has long identified dendrite growth (and associated electronic shorting) as a significant safety issue. Prior to the invention disclosed in the '520 patent, however, solutions to the problem were varied and achieved mixed results.

86. Celgard invented the separator technology described and claimed in the '520 patent to address safety and durability problems in lithium batteries. The separator claimed in claim 12 of the '520 patent, for example, includes, among other things, (1) a ceramic composite layer (or

coating) including a mixture of inorganic particles and a matrix material, and (2) a polyolefinic microporous layer. The claimed separator's ceramic composite layer combines inorganic particles within a matrix material to create a ceramic composite layer adapted to at least block dendrite growth, which prevents electrical shorts, improving the safety and commercialization of high-energy lithium batteries. The claimed separator's polyolefinic microporous layer is adapted to block ionic flow between the anode and cathode at an elevated temperature such as during thermal runaway. This shutdown functionality further improves battery safety.

87. The '520 patent is based on a reissue application that was filed in 2015, issued in 2019, and expired on April 10, 2020. The '520 patent is a reissue of the 6,432,586 patent that was filed in 2000 and issued in 2002. Celgard is the owner by assignment of all right, title, and interest in and to the '520 patent, including the right to sue for past damages and injunctive relief.

88. The Patent Office has confirmed the validity of claim 12 of the '520 patent after three *inter partes* review challenges. A true and correct copy of U.S. Patent No. 6,432,586 ("the '586 patent"), the predecessor patent to the '520 patent, complete with *Inter Partes* Review Certificate is attached hereto as **Exhibit F**. On June 3, 2019, the validity of claim 12 was yet again confirmed in the Notice of Allowance in the reissue application that matured into the '520 patent.

89. Another of Celgard's inventions is an innovative way to remove a pin from a battery assembly. In the manufacture of high energy, lightweight batteries, for example, secondary lithium batteries, the battery assembly, i.e., an anode tape and a cathode tape sandwiching a separator tape, is wound about one or more pins (or cores or mandrels). To begin winding of the assembly, the separator tape is taken up on the pin, and then the anode and cathode tapes are fed to the pin. Upon completion of the winding, the battery assembly is removed (or withdrawn) from the pin. If the assembly (i.e., the separator tape) sticks on the pin during withdrawal, the assembly "telescopes" and must be rejected. Such rejects increase the cost of the battery manufacturing process. In response to this problem, Celgard invented various separator methods and separators having improved pin removal properties, i.e., separators that will not cause telescoping when the battery assembly is removed from the pin. These inventive separators and methods are claimed in the '867 patent.

90. Celgard is the owner by assignment of all right, title, and interest in and to the '867 patent, including the right to sue for past damages and injunctive relief. The '867 patent was duly and legally issued by the United States Patent and Trademark Office on February 17, 2004, with all claims valid.

91. Celgard has invested in significant intellectual property protection and vigorously enforces its patents. Celgard has been forced to enforce its intellectual property rights against other similar infringers, which ended in favorable outcomes to Celgard.

92. For example, in 2013, Celgard filed suit against Sumitomo Chemical Co., Ltd., in the United States District Court for the Western District of North Carolina for infringement of the '520 patent (or its predecessor, the '586 patent). The suit was resolved pursuant to agreement of the parties. The suit and its resolution were subject to at least national, industry-focused media coverage as shown in **Exhibit G** attached hereto.

93. In 2014, Celgard filed a patent infringement suit against LG Chem Ltd. and LG Chem America, Inc. (collectively, "LG Chem") in the United States District Court for the Western District of North Carolina for infringement of the '520 patent (or its predecessor, the '586 patent). The suit was resolved pursuant to agreement of the parties after significant district court litigation and patent office proceedings. The suit and its resolution were subject to at least national, industry-focused media coverage as shown in **Exhibit H** attached hereto.

94. In 2014, Celgard filed suit against SK Innovation Co., Ltd. ("SK Innovation") in the United States District Court for the Western District of North Carolina for infringement of the '520 patent (or its predecessor, the '586 patent). The suit was resolved pursuant to agreement of the parties after significant district court litigation and patent office proceedings. The suit and its resolution were subject to at least national, industry-focused media coverage as shown in **Exhibit I** attached hereto.

95. In December 2018, Celgard filed a patent infringement suit against MTI Corporation in the United States District Court for the Northern District of California for infringement of the '520 patent (or its predecessor, the '586 patent). *Celgard, LLC v. MTI Corporation*, No. 5:18-cv-07441-VKD (N.D. Cal. filed Dec. 11, 2018). The suit against MTI has settled and has been the

subject of at least national and industry-focused media coverage. *See, e.g.*, **Exhibit J**.

96. In May 2019, Celgard filed a patent infringement suit against Targray in the United States District Court for the Northern District of California for infringement of the '520 patent (or its predecessor, the '586 patent). *Celgard, LLC v. Targray Technology International Inc.*, No. 5:19-cv-02401-VKD (N.D. Cal. filed May 2, 2019). The suit against Targray has settled and has been the subject of at least national and industry-focused media coverage. *See, e.g.*, **Exhibit K.**

97. Most recently, Celgard filed a trade secret misappropriation action against Senior-China in the United Kingdom and, on July 30, 2020, the Court entered a preliminary injunction against Senior-China, stating that "Celgard has adduced sufficient evidence to establish a serious issue to be tried that its trade secrets have been used in the development and manufacture by Senior of battery separators since the time of Dr. Zhang's arrival as its employee." **Exhibit S**. On August 6, 2020, the Court issued its Penal Notice, ordering that "the Defendant whether acting by itself or its directors, officers, employees, servants or agents or otherwise howsoever shall not make, offer, put on the market, import, export or store for any of those purposes the Battery Separator in the United Kingdom." *Id.*

98. At least as of February 25, 2019, Celgard provided notice to Senior-China about its violation of Celgard's intellectual property, including infringement of the '520 patent (or its predecessor, the '586 patent).

99. At least as of November 12, 2019, Celgard provided notice to Farasis Energy Inc. about Senior-China's violation of Celgard's intellectual property, including infringement of the '520 and '867 patents.

B. Market for Separators

100. When customers select a separator for use in a battery, they often face competing issues. For example, a battery design that has a high energy density might have a poor cycle life. One of the most important competing issues is between energy density and safety. Particularly for batteries with high capacity (e.g., those used in EVs), a defect in a separator can lead to an unsafe event—such as a battery fire or explosion. Accordingly, while a battery designer might want to use a particularly thin separator to maximize energy density, a thin separator might be more susceptible

to an unsafe condition than a thicker or coated separator.

101. Today, ceramic coated separators are increasingly common in the rechargeable (often large format) lithium batteries used in EVs and for other high-power applications. Much of the plug-in EV market in the U.S. has adopted ceramic coated separator technology. As the EV market continues to grow, an increasing percentage of manufacturers have turned to ceramic coated separators as a means to improve battery safety, battery cycle life, and vehicle driving range.

102. The market for plug-in EVs that use lithium-ion batteries, specifically, is rapidly expanding with an increasing number of makes and models available for sale. Vehicle manufacturers are rapidly increasing the number of available plug-in EVs as demand grows.

103. In the midst of this growth, vehicle manufacturers continue to explore options for increasing the per-charge EV driving range, often using, or making plans to use, a ceramic coated separator to achieve this objective. The success behind the growth of EVs is significantly correlated with longer per-charge driving range—a critical consumer criterion. The longer per-charge driving ranges now available in today's EVs are supported by very high energy density lithium-ion battery cells. The characteristics of these types of lithium-ion battery cells typically lead cell design engineers to specify ceramic coated separators to help address a balance between performance (i.e., longer per-charge driving range) and safety.

C. Battery Separator Supply Chain and Competition

104. Tiered supply chains are the rule in the EV and CE industries, where the final product consists of many complex components and sub-assemblies that must comply with stringent quality, manufacturing, and business standards. Celgard is an important member of the EV or CE tiered supply chain. As such, it typically supplies components to a battery supplier, who in turn supplies components directly to an original equipment manufacturer (OEM) that produces CE devices, EVs, or energy storage systems.

105. Competition for battery sales does not occur on a unit-by-unit basis. Rather, battery manufacturers compete to have EV or CE manufacturers or OEMs use their batteries for an entire product line. Supplying batteries and battery parts for EVs and CEs requires extensive testing and validation among the separator supplier, the battery manufacturer, and the EV or CE manufacturer.

Once selected, the battery manufacturers "design in" a particular separator for that "generation"—i.e., that model's production life cycle—which, for EVs, lasts from two to five years, or more. Because many batteries are designed to last for years, and because the ramifications of a battery fire or explosion are so dire, OEMs tend to stick with a battery design, and a particular separator, for a long time. The successful battery manufacturer (and separator manufacturer) thereby procures a blocking position that immunizes it from competition for several years.

106. Celgard's experience in the EV market provides a good illustration. Celgard often collaborates with its customers and potential customers to provide highly-engineered and specifically-designed separators for each customer or potential customer's requirements. Typically, the selling process for a separator requires a series of meetings between the separator supplier, the battery producer, and sometimes the OEM, where requirements are discussed, and sample separators are provided and evaluated. These sample separators may be tested as isolated units, or they may be built into working batteries. Following testing, the separator manufacturer may modify the separator, and the new separator and batteries built with it are retested. This iterative process can continue for months or even years, and it can continue through the approval process, and even can be used to make continuous improvements to the product after it is launched.

107. Over time, relationships are developed among the supplier, the tiered customer and the OEM at many levels during this process. Supplying components for an EV creates a familiarity and confidence that yields an "incumbency effect" that can carry over from one design cycle to the next. "Incumbency effect" increases the likelihood that the tiered suppliers and OEM will continue to harvest their initial investment through future contracts. Furthermore, through its experience in the EV industry, Celgard has learned that OEMs are more likely to look to their current suppliers for future designs, rather than to suppliers to which the OEMs have not already awarded business, and other OEMs are more likely to select suppliers they know. All of this results in a strong competitive advantage for existing suppliers.

D. The Emerging Market in China for Separators

108. The Chinese government is seeking to have China become the global leader in

lithium-ion battery technology, as well as the leader in EV technology. To facilitate these goals, the Chinese government provides subsidies for EVs, which in turn has caused demand for lithium-ion batteries to grow. According to market research, there are over 75 competing Chinese companies that are positioned to provide lithium-ion batteries with ceramic coated separators with many more attempting to enter the market, including international manufacturers that must either meet strict standards or partner with a Chinese company. To accommodate the increased demand for battery cells (and separators), Chinese manufacturers are adding large numbers of production lines for separators, raising the total manufacturing capability to over 1 billion square meter (m^2) per year of separators.

109. Receipt of subsidies from the Chinese government is conditioned on meeting certain requirements, including a minimum energy density for the batteries installed in the EV. Thus, as with other EV manufacturers, Chinese EV manufacturers have continued to explore options for increasing the per-charge driving range of EVs.

110. With large production capabilities and government subsidies, Chinese battery manufacturers (like Farasis-China) and Chinese separator manufacturers (like Senior-China), can significantly discount the prices of their products, including separators and batteries.

111. One such company that manufactures coated and uncoated separators, including separators in China and significantly discounts prices for its separators is Senior-China.

E. Senior's Violation of Celgard's Intellectual Property Rights

112. As a result of its considerable investment in its intellectual property, Celgard has gained a distinct, commercial and economic advantage in the separator market that has resulted in substantial sales and market share for its products.

113. Senior has embarked on a scheme to harm Celgard by violating its intellectual property rights. As part of that scheme, Senior hired former Celgard employee, Dr. Zhang. Dr. Zhang was employed by Celgard from 2005 until 2016 and, during that time, held a number of positions, was part of the R&D department and function, and was an expert at Celgard in at least resins, polymers, membranes, base films, and process and production technology.

114. During his time at Celgard, Dr. Zhang was an inventor or co-inventor on a number

of Celgard patents, and was extensively and intimately involved with Celgard's separators' design, development, and production. As a result, Dr. Zhang has unique, detailed, and extensive knowledge of Celgard's patented technology.

115. Dr. Zhang left Celgard in October, 2016 and lied and said he was going to work for General Electric. However, Celgard later learned that Dr. Zhang joined Senior as its CTO in 2017 and changed his name to "Bin Wang" specifically so that he could hide from Celgard. Dr. Zhang retained an office in California at the same address as Sun Town, Global Venture, and in the same building as Senior-California.

116. Celgard had asked Senior in the summer of 2018 whether Dr. Zhang worked at Senior, and Senior said no. Continuing the lie, in early 2019, Dr. Zhang called Celgard, stating he was not "technically" working for Senior and that he was not working on separator-related technology for Senior. He stated he was instead working on technology such as reverse-osmosis. Recently, having been caught in a lie, Senior admitted it had requested Dr. Zhang to change his name to avoid Celgard's detection and had named Dr. Zhang its CTO beginning in 2017. Further, Dr. Zhang has been working on Senior's separator technology despite his assertions to Celgard to the contrary.

117. Dr. Zhang has been working for Senior in some capacity, through Senior-China, Senior-California, Sun Town, and/or Global Venture, at least as early as his departure from Celgard in 2016. Dr. Zhang and Senior (through one or more of the named entities) planned for Dr. Zhang to leave Celgard and work for Senior with the intent that Dr. Zhang create infringing separators for Senior and with the intent to take away business from Celgard.

118. On February 25, 2019, after Celgard learned that Dr. Zhang was working at Senior, Celgard sent a letter to Senior-China explaining, among other things, that Senior-China infringed at least the '520 patent (or its predecessor, the '586 patent). Senior-China dismissed the letter and never formally responded.

119. Senior hired Dr. Zhang for the specific purpose of using his knowledge of Celgard's patented technology to help Senior develop its infringing separators and to capitalize on his prior relationship and confidential knowledge about Celgard's customers. By unlawfully creating

infringing separators, Senior was intentionally attempting to drive Celgard out of the market.

120. After creating infringing separators, Senior's global market share increased.

121. Senior's (and Farasis') infringement of the Asserted Patents and other wrongdoing has caused and will continue to cause Celgard to lose sales, customers, reputation, and market share for its products and thereby has caused and will continue to cause Celgard significant pecuniary harm for which it seeks injunctive relief and monetary damages and relief in an amount to be determined at trial.

122. Celgard has been and will continue to be irreparably harmed by Defendants infringing and unlawful activities.

F. Infringing Products

123. All of the Defendants are aware of Celgard and its products, including Celgard's separator products.

124. Senior-China manufactures ceramic coated lithium-ion battery separators, including, but not limited to, those sold under at least the series designations SH, MCS, and MFS, those sold under at least the grades SH216, SH416, SH220, SH225, and SH230, and those sold under at least the model numbers SH320D14, SH420D14, SH420D22, SH416W14, SH416W22, SH216D14, SH216D22, SW312F (SH716W14, SH716W22), SW316E (SH220W14, SH220W22), SW320H (SH624W14, SH624W22), SH816D14, SH816D22, SH216Z14, SH216Z22, SH220D14, SH220D22, SH620D14, SH620D22, SH620T14, SH320Z14, SH224D14, SH224D22, SH624D14, SH624Z14, SH229D14, SH229D22, YV218D51A, YV718W51A, YT623D44A, and YT413W22.

125. Senior-China manufactures uncoated polypropylene lithium-ion battery separators, including, but not limited to, those sold under at least the series designations SD, SQ, ST, and SZ, those sold at various thicknesses and porosity values, and those sold under at least the model numbers SD216C, SD216101, SD216001, SD216201, SD216E, SD216301, SD220C, SD220001, SD220101, SD422201, SD220201, SD425201, SD425301, SD425401, SD432101, SD432201, SD432301, SD440201, SD440301, SQ212D, SD212202, SQ212F, SD214202, SQ214E, SD216102, SQ216C, SD216202, SD220102, SD220202, SD220202 (double layers), SD425202, SD460201, ST212D, ST212F, ST214C, ST216D, ST216E, ST218D, ST218F, ST420C, ST420E,

and SZ212202.

126. These products are sold by each Defendant (and/or through its subsidiaries, divisions, affiliates, or groups).

127. Targray, a U.S. Distributor of Senior's separators, for example, states of Senior's separators that "[t]he latest addition to Targray's line of battery separators, our ceramic separators delivers an exceptional combination of safety, temperature performance and life cycle for lithium-ion battery manufacturers and R&D facilities. Given their rigorous safety and performance features, our ceramic separators are ideally suited for advanced li-ion battery applications, namely electric vehicles and energy storage systems."[5]

128. Senior's SH416W14 and SH416W22 separators are ceramic-coated wet process polyethylene separators, which "are also available with aluminum oxide ceramic coating to further enhance safety characteristics."[6]

129. Senior's SH216D14 and SH216D22 separators are "ceramic-coated dry process ceramic separators," which "are also available with aluminum oxide ceramic coating to further enhance safety characteristics."[7]

130. Senior's SH416W22 and SH216D22 are the double-side coated versions of SH416W14 and SH216D14, respectively.

131. At least Senior's SH416W14, SH416W22, SH216D14, and SH216D22 separators[8] infringe at least Claim 12 of the '520 patent. Claim 12 of the '520 patent recites:

> A separator for an energy storage system comprises:
>
> at least one ceramic composite layer or coating, said layer including a mixture of 20-95% by weight of inorganic particles selected from the group consisting of SiO_2, Al_2O_3, $CaCO_3$, TiO_2, SiS_2, $SiPO_4$, and mixtures thereof, and 5-80% by weight of a matrix material selected from the group consisting of polyethylene oxide, polyvinylidene fluoride, polytetrafluoroethylene, copolymers of the foregoing, and mixtures thereof, said layer being adapted to at least block dendrite growth and to prevent electronic shorting; and

[5] https://www.targray.com/li-ion-battery/separators/ceramic-separators (last accessed April 5, 2019), attached as **Exhibit L**.
[6] "High-performance Separators," Targray—Battery Division, attached as **Exhibit M**, at 6.
[7] *Id.*
[8] Further investigation may reveal that other ceramic coated separators from Senior-China and/or Senior-California also directly or indirectly infringe Claim 12 (or other claims) of the '520 patent.

> at least one polyolefinic microporous layer having a porosity in the range of 20-80%, an average pore size in the range of 0.02 to 2 microns, and a Gurley Number in the range of 15 to 150 sec, said layer being adapted to block ionic flow between an anode and a cathode.

132. The above-identified Senior ceramic coated separators comprise a ceramic composite layer or coating composed of inorganic particles of the nature and weight percentage (or the equivalent thereto) set forth in Claim 12 of the '520 patent. These Senior ceramic coated separators have an "aluminum oxide ceramic coating to further enhance safety characteristics."[9]

133. The above-identified Senior ceramic coated separators comprise a ceramic composite layer or coating composed of a matrix material of the nature and weight percentage (or the equivalent thereto) set forth in Claim 12 of the '520 patent.

134. The above-identified Senior ceramic coated separators comprise a ceramic composite layer that is "adapted to at least block dendrite growth and to prevent electronic shorting," as set forth in Claim 12 of the '520 patent. On its website, Targray (Senior's distributor) acknowledged that these Senior "battery separators must be able to withstand penetration and branching moss-like crystalline minerals in order to prevent the contamination of electrodes. If the separator material is compromised, the performance of the high-power cell declines."[10]

135. The above-identified Senior ceramic coated separators comprise a polyolefinic microporous layer having porosity, average pore size, and Gurley Number measurements within the ranges (or the equivalents thereto) set forth in Claim 12 of the '520 patent.

136. The above-identified Senior ceramic coated separators comprise a polyolefinic microporous layer that is "adapted to block ionic flow between an anode and a cathode," as set forth in Claim 12 of the '520 patent.

137. Further, at least Senior's SD216C, SH420D14, SH420D22, SH320D14, SD216101, SD216001, SD216201, SH216D14, and SH216D22 separators[11] infringe at least Claims 17 and 18 of the '867 patent. Claim 17 of the '867 patent, for example, recites:

---

[9] *Id.*

[10] https://www.targray.com/li-ion-battery/separators (last accessed Apr. 9, 2019), attached hereto as **Exhibit N**.

[11] Further investigation may reveal that other Senior coated or uncoated separators also directly or indirectly infringe at least Claim 17, or even other claims, of the '867 patent.

> A battery separator with improved pin removal properties comprising:
>
> a microporous membrane having a polypropylene surface portion including at least 50 ppm of a metallic stearate.

138. The above-identified Senior separators comprise a microporous membrane having a polypropylene surface portion including at least 50 ppm of a metallic stearate.

139. One or more of the separators identified above by model number has been purchased and used by Farasis in its lithium-ion batteries, and resold in the United States as part of its lithium-ion batteries. For example, Farasis uses at least Senior's SH320D14 separator or similar separator in its lithium-ion battery, identified as ZF7.2 and FEI Part No. PCM102064-D01 in Zero Motorcycles' FX model.

G. Farasis' Breach of the Supply Agreement with Celgard

140. At least Farasis Energy (Gan Zhou), Inc., Farasis Energy Inc., and Celgard previously had a long-standing business relationship together, with Celgard supplying its separators for Farasis' products.

141. For example, on or around April 26, 2017, Celgard had entered into a Memorandum of Understanding ("MOU") with Farasis Energy Inc. The MOU demonstrated Celgard's and Farasis Energy Inc.'s intent to form and operate a joint venture in China for the manufacture of ceramic coated separators (having Celgard base films) for use in Farasis' lithium-ion batteries. The MOU is signed by the Vice President of Research for Farasis Energy (Gan Zhou), Inc. A preceding 2016 Letter Agreement explains the parties as "FARASIS ENERGY, INC. (for Farasis, and for Farasis USA)" as well as "FARASIS ENERGY (GANZHOU) INC. (for FARASIS China)." Celgard alleges that both Farasis Energy Inc. and Farasis Energy (Gan Zhou), Inc. are parties to the 2017 MOU.

142. Further, since 2015, Farasis Energy (Gan Zhou), Inc. and Celgard have had a supply agreement. On or around May 4, 2018, Celgard and Farasis Energy (Gan Zhou), Inc. entered into the latest supply agreement ("2018 Supply Agreement"). The 2018 Supply Agreement is a valid and binding agreement for Celgard to be the provider of separators to at least Farasis Energy (Gan Zhou), Inc.

143. The 2018 Supply Agreement was effective through March 31, 2019, and included a provision that during the contract term, Buyer (Farasis Energy (Gan Zhou), Inc.) agreed to purchase certain Celgard separator products from Seller (Celgard) of a certain specified amount through March 31, 2019.

144. In January 2019, during the term of the 2018 Supply Agreement, Farasis Energy (Gan Zhou), Inc. told Celgard it was ceasing purchases from Celgard, it refused to pay for specialized product already made for it, and announced it was going to purchase Senior-China's separators instead.

145. On or around January 1, 2019, Farasis Energy (Gan Zhou), Inc. and Senior-China entered into a supply agreement for Senior-China to supply infringing separators to Farasis Energy (Gan Zhou), Inc. That contract was during the term of the 2018 Supply Agreement, pursuant to which Farasis Energy (Gan Zhou), Inc. was to be purchasing certain Celgard separators at contracted minimum quantities. The result of this new arrangement with Senior-China was a breach of the 2018 Supply Agreement.

146. As a result of Senior-China and Farasis Energy (Gan Zhou), Inc.'s conduct in replacing Celgard as the separator supplier, Celgard lost millions of m2 of business per year from Farasis Energy (Gan Zhou), Inc. and lost a then-valuable supply relationship. Further, Farasis was now using infringing separators in its products, such that Farasis was now infringing and continues to infringe Celgard's patents, causing Celgard additional significant harm.

FIRST CLAIM FOR RELIEF

Infringement of the '520 patent

147. Celgard repeats and incorporates by reference all prior allegations of this Complaint as if fully set forth herein.

148. Celgard is the owner by assignment of all rights, title, and interest in and to the '520 patent.

149. The '520 patent is valid and enforceable.

150. In violation of 35 U.S.C. § 271(a), each Defendant has infringed and continues to infringe at least Claim 12 of the '520 patent by making, using, offering for sale, selling, and/or

importing in or into the United States ceramic coated separators covered by at least Claim 12 of the '520 patent, including, but not limited to, at least Senior's ceramic coated separators identified above by model number.

151. Specifically, by example, and in violation of 35 U.S.C. § 271(a), Senior-California, Global Venture, and Sun Town has infringed and continues to infringe at least Claim 12 of the '520 patent by making, using, offering for sale, selling, and/or importing in or into the United States ceramic coated separators covered by at least Claim 12 of the '520 patent, including, but not limited to, at least Senior's ceramic coated separators identified above by model number.

152. Specifically, by example, and in violation of 35 U.S.C. § 271(a), each Farasis-US and Farasis-China Defendant has infringed and continues to infringe at least Claim 12 of the '520 patent by making, using, offering for sale, selling, and/or importing in or into the United States its lithium-ion batteries, such as FEI Part No. PCM102064-D01 and ZF7.2, that include Senior's infringing ceramic coated separators identified above by model number, such as SH320D14 or similar separator.

153. As a direct and proximate result of Defendants' infringement of the '520 patent, Celgard has been injured and has been caused significant harm and financial damages.

154. Senior-California and at least Sun Town and Global Venture have also induced and continue to induce infringement of at least Claim 12 of the '520 patent in violation of 35 U.S.C. § 271(b).

155. Senior-California and at least Sun Town and Global Venture induce their customers, purchasers, users, and/or developers of Senior's separators, such as Farasis, to infringe at least Claim 12 of the '520 patent (or its predecessor, the '586 patent), and do so with specific intent, by providing instructions, directions, information, and/or knowledge on how to use their separators, and/or incorporate their separators into other products, such as lithium-ion batteries.

156. Senior-California and at least Sun Town and Global Venture have had knowledge of the '520 patent (or its predecessor, the '586 patent) at least as early as February 25, 2019. Farasis Energy Inc. has had actual knowledge of the '520 patent at least as early as November 12, 2019. The other Defendants have had actual knowledge of the '520 patent as least as early as December

12, 2019, the date of the First Amended Complaint. Nevertheless, Senior-California and at least Sun Town and Global Venture have continued to induce their customers, purchasers, users, and/or developers, such as Farasis, to infringe. They do so through documentation accompanying Senior's separators, technical support, advertisements, datasheets, demonstrations, and/or tutorials.

157. As a direct and proximate result of Senior-California, Sun Town, and Global Venture's induced infringement of the '520 patent, Celgard has been injured and has been caused significant harm and financial damages.

158. Each Defendant, without Celgard's permission, has been and is presently infringing at least Claim 12 of the '520 patent in violation of 35 U.S.C. § 271(c), by selling or offering to sell material or apparatuses for use in practicing the '520 patent (and its predecessor, the '586 patent) that are a material part of the invention to their customers, purchasers, users, and/or developers.

159. The components sold or offered for sale by Defendants have no substantial non-infringing uses. Further, they are not staple articles of commerce and constitute a material part of the invention. Thus, Defendants knew or should have known that the products for which their components were made was protected by the '520 patent (and its predecessor, the '586 patent), and yet Defendants infringed upon the '520 patent in spite of this knowledge.

160. As such, each Defendant has contributorily infringed and continues to infringe the '520 patent, as set forth herein, knowing that the materials or components would be made or adapted for use in an infringing manner.

161. For example, and without limitation, Farasis' lithium-ion batteries that contain the Senior infringing separators are used in end-user products, including, those manufactured, used, offered for sale, sold, imported into, or exported from the United States by Zero Motorcycles.

162. Farasis' lithium-ion batteries that contain the Senior infringing separators are not staple articles or commodities of commerce suitable for non-infringing use and are especially made for or adapted for use in infringing the Asserted Patents. Farasis' lithium-ion batteries that contain the Senior infringing separators cannot be modified by the end user so as not to be infringing the Asserted Patents. They are only designed to be used in an infringing manner. By contributing a material part of the infringing products' manufacturing, selling, offering for sale, using, and/or

importing into, and/or exporting from the United States by their OEMs, importers, exporters, customers, distributors, resellers and others, Defendants have been and are now directly and/or indirectly infringing the Asserted Patents under 35 U.S.C. § 271(c).

163. Defendants' infringing acts have been and are the actual and proximate cause of damage to Celgard, and Celgard has sustained damages and harm and will continue to sustain damages and harm as a result of Defendants' infringement of the '520 patent (and its predecessor, the '586 patent).

164. Defendants continued infringement after having knowledge of the patents is in spite of the objectively high likelihood that their activities constitute infringement of a valid patent, and this risk was either known or so obvious that it should have been known to Defendants. Thus, Defendants' continued infringement at least as of these dates is willful and deliberate.

165. Products that contain infringing Senior-China separators include at least Farasis-China's and Farasis-US's lithium-ion batteries (such as FEI Part No. PCM102064-D01 and ZF7.2, and Farasis pouch cells type IMP06160230P25A), which are offered for sale and sold to manufacturers such as Zero Motorcycles.

166. Celgard has suffered and continues to suffer damages and irreparable harm as a result of Defendants' past and ongoing infringement. Unless and until Defendants' infringement is enjoined, Celgard will continue to be damaged and irreparably harmed.

167. Celgard is entitled to all remedies at law and equity, including, but not limited to, an injunction against Defendants' infringement of the '520 patent pursuant to 35 U.S.C. § 283.

168. Celgard is entitled to damages for Defendants' infringement of the '520 patent, including, but not limited to, damages pursuant to 35 U.S.C. §§ 284, 285.

SECOND CLAIM FOR RELIEF

Infringement of the '867 patent

169. Celgard repeats and incorporates by reference all prior allegations of this Complaint as if fully set forth herein.

170. Celgard is the owner by assignment of all rights, title, and interest in and to the '867 patent.

171. The ’867 patent is valid and enforceable.

172. In violation of 35 U.S.C. § 271(a), each Defendant has infringed and continues to infringe at least Claims 17 and 18 of the ’867 patent by making, using, offering for sale, selling, and/or importing in or into the United States separators covered by at least Claims 17 and 18 of the ’867 patent, including, but not limited to, at least Senior-China’s separators identified above by model number.

173. Specifically, for example, and in violation of 35 U.S.C. § 271(a), Senior-California, Global Venture, and Sun Town has infringed and continues to infringe at least Claims 17 and 18 of the ’867 patent by making, using, offering for sale, selling, and/or importing in or into the United States separators covered by at least Claims 17 and 18 of the ’867 patent, including, but not limited to, at least Senior-China’s separators identified above by model number.

174. Specifically, for example, and in violation of 35 U.S.C. § 271(a), each Farasis-US and Farasis-China Defendant has infringed and continues to infringe at Claims 17 and 18 of the ’867 patent by making, using, offering for sale, selling, and/or importing in or into the United States its lithium-ion batteries, such as FEI Part No. PCM102064-D01 and ZF7.2, that include Senior’s infringing separators identified above by model number, such as SH320D14 or similar separator.

175. As a direct and proximate result of each of Defendant’s infringement of the ’867 Patent, Celgard has been injured and has been caused significant harm and financial damages.

176. Senior-California, Sun Town and Global Venture have also induced and continue to induce infringement of at least Claims 17 and 18 of the ’867 patent in violation of 35 U.S.C. § 271(b).

177. Senior-California, Sun Town and Global Venture induce their customers, purchasers, users, and/or developers of their separators to infringe at least Claims 17 and 18 of the ’867 patent, and do so with specific intent, by providing instructions, directions, information, and/or knowledge on how to use their separators, and/or incorporate their separators into other products, such as lithium-ion batteries.

178. Senior-California, Sun Town and Global Venture have had knowledge of the ’867 patent at least as early as September 16, 2019. Farasis Energy Inc. has had actual knowledge of the

'867 patent at least as early as November 12, 2019. The other Defendants have had actual knowledge of the '867 patent as least as early as December 12, 2019, the date of the First Amended Complaint. Nevertheless, Senior, Sun Town and Global Venture have continued to induce their customers, purchasers, users, and/or developers to infringe. They do so through documentation accompanying their separators, their technical support, advertisements, datasheets, demonstrations, and/or tutorials.

179. As a direct and proximate result of Senior-California's, Sun Town's and Global Venture's induced infringement of the '867 Patent, Celgard has been injured and has been caused significant harm and financial damages.

180. Each Defendant, without Celgard's permission, has been and is presently infringing at least Claims 17 and 18 of the '867 patent in violation of 35 U.S.C. § 271(c), by selling or offering to sell material or apparatuses for use in practicing the '867 patent that is a material part of the invention to their customers, purchasers, users, and/or developers.

181. The components sold or offered for sale by each Defendant has no substantial non-infringing uses. Further, they are not staple articles of commerce and constitute a material part of the invention. Thus, each Defendant knew or should have known that the combination for which their components were made was protected by the '867 patent and yet Defendants infringed upon the '867 patent in spite of this knowledge.

182. As such, Defendants have contributorily infringed and continue to infringe the '867 patent, as set forth herein, knowing that the materials or components would be made or adapted for use in an infringing manner.

183. For example, and without limitation, Farasis' lithium-ion batteries that include Senior infringing separators are used in end-user products, including, those manufactured, used, offered for sale, sold, imported into, or exported from the United States by Zero Motorcycles.

184. Farasis' lithium-ion batteries that include Senior infringing separators are not staple articles or commodities of commerce suitable for non-infringing use and are especially made for or adapted for use in infringing the Asserted Patents. Farasis' lithium-ion batteries that include Senior infringing separators cannot be modified by the end user so as not to be infringing the Asserted

Patents. They are only designed to be used in an infringing manner. By contributing a material part of the infringing products' manufacturing, selling, offering for sale, using, and/or importing into, and/or exporting from the United States by their OEMs, importers, exporters, customers, distributors, resellers and others, Defendants have been and are now directly and/or indirectly infringing the Asserted Patents under 35 U.S.C. § 271(c).

185. Defendants continued infringement on or after knowledge of the '867 patent is in spite of the objectively high likelihood that their activities constitute infringement of a valid patent, and this risk was either known or so obvious that it should have been known to Defendants. Thus, Defendants' continued infringement at least as of the filing of the Complaint is willful and deliberate.

186. Products that contain infringing Senior-China separators include at least Farasis-China's and Farasis-US's lithium-ion batteries (such as FEI Part No. PCM102064-D01 and ZF7.2, and Farasis pouch cells type IMP06160230P25A), which are offered for sale and sold to manufacturers such as Zero Motorcycles.

187. Celgard has suffered and continues to suffer damages and irreparable harm as a result of Defendants' past and ongoing infringement. Unless and until Defendants' infringement is enjoined, Celgard will continue to be damaged and irreparably harmed.

188. Celgard is entitled to all remedies at law and equity, including, but not limited to, an injunction against Defendants' infringement of the '867 patent pursuant to 35 U.S.C. § 283.

189. Celgard is entitled to damages for Defendants' infringement of the '867 patent, including, but not limited to, damages pursuant to 35 U.S.C. §§ 284, 285.

THIRD CLAIM FOR RELIEF

Breach of Contract

190. Celgard repeats and incorporates by reference all prior allegations of this Complaint as if fully set forth herein.

191. The 2018 Supply Agreement between Celgard and Farasis Energy (Gan Zhou), Inc. is a valid and enforceable contract.

192. The parties knowingly and willingly entered into the 2018 Supply Agreement.

193. Celgard has performed all of its material obligations under the 2018 Supply Agreement.

194. The 2018 Supply Agreement was effective through March 31, 2019, and included a provision that during the contract term, Buyer (Farasis Energy (Gan Zhou), Inc.) agreed to purchase certain Celgard separator products from Seller (Celgard) of a certain specified amount through March 31, 2019.

195. In January 2019, during the term of the 2018 Supply Agreement, Farasis Energy (Gan Zhou), Inc. told Celgard it was ceasing purchases from Celgard, it refused to pay for specialized product already made for it, and announced it was going to purchase Senior-China's separators instead.

196. At least in or about January 2019, therefore Farasis Energy (Gan Zhou), Inc. unilaterally terminated the 2018 Supply Agreement without prior written notice, and without paying for all goods and services it received thereunder, and all amounts due and owing thereunder.

197. On or around January 1, 2019, Farasis Energy (Gan Zhou), Inc. and Senior-China entered into an arrangement for Senior-China to supply infringing separators to Farasis. That contract was during the term of the 2018 Supply Agreement, pursuant to which at least Farasis Energy (Gan Zhou), Inc. was to be purchasing certain Celgard separators at contracted minimum quantities. The result of this new arrangement with Senior-China was a breach of the 2018 Supply Agreement.

198. As a result of Farasis Energy (Gan Zhou), Inc.'s breach, Celgard lost millions of m2 of business per year.

199. Accordingly, as a direct and proximate cause of Farasis Energy (Gan Zhou), Inc.'s contractual breaches, Celgard has suffered and continues to suffer immediate and irreparable injury, loss, harm, and/or damage, and will continue to suffer said injury, loss, harm, and/or damage.

200. Celgard is entitled to recover such damages in an amount to be proven at trial. As a direct and proximate result of Farasis Energy (Gan Zhou), Inc.'s contractual breaches, Celgard has suffered additional damages.

FOURTH CLAIM FOR RELIEF

Breach of Implied Covenant of Good Faith and Fair Dealing

201. Celgard repeats and incorporates by reference all prior allegations of this Complaint as if fully set forth herein.

202. The 2018 Supply Agreement between Celgard and Farasis Energy (Gan Zhou), Inc. contains implied covenants by the parties to act in good faith and deal fairly with each other.

203. Farasis Energy (Gan Zhou), Inc. had an implied covenant to act in good faith and fair dealing and not enter into a financial arrangement with a direct competitor that would place Celgard at an economic and marketplace disadvantage. Yet, Farasis Energy (Gan Zhou), Inc. intentionally terminated the 2018 Supply Agreement with Celgard without notice and entered into a financial arrangement with Senior-China—Celgard's direct competitor. Such conduct has provided and is providing Senior-China with an economic and marketplace advantage.

204. Farasis Energy (Gan Zhou), Inc. therefore violated, and continues to violate, the 2018 Supply Agreement's implied covenant of good faith and fair dealing by terminating the agreement to enter into a financial arrangement with Celgard's direct competitor, which provides Senior-China with an economic and marketplace advantage.

205. This breach of implied covenant of good faith and fair dealing has caused, and continues to cause, Celgard to suffer substantial monetary damages, in an amount to be determined at trial, as well as monetary damages that cannot be calculated, and irreparable harm to its reputation and goodwill.

JURY DEMAND

Pursuant to Civ. L.R. 3-6 and Fed. R. Civ. P. 38, Celgard hereby requests a trial by jury.

REQUEST FOR RELIEF

Celgard respectfully asks that the Court enter judgment in its favor as follows:

A. Judgment in favor of Celgard and against Defendants on each cause of action alleged herein;

B. Finding that Defendants have infringed and are presently infringing the Asserted Patents;

C. Finding that Defendants' infringement of the Asserted Patents has been and continues to be willful;

D. Awarding Celgard damages adequate to compensate it for Defendants' past and present infringement, but in no event less than a reasonable royalty;

E. Awarding an accounting and supplemental damages for those acts of infringement committed by Defendants subsequent to the discovery cut-off date in this action through the date Final Judgment is entered;

F. Ordering that damages for infringement of the Asserted Patent(s) be trebled as provided for by 35 U.S.C. § 284 for Defendants' willful infringement of the Asserted Patents;

G. That Celgard be awarded its full actual and consequential damages according to proof at trial;

H. That Celgard be awarded Defendants' restitution to the fullest extent available under applicable law;

I. That Celgard be awarded punitive, enhanced, and/or exemplary damages, including but not limited to at least doubled damages under Cal. Civ. Code Section 3426, to the fullest extent available under applicable law;

J. Finding that this case is exceptional;

K. Awarding Celgard its attorneys' fees and costs, together with prejudgment and post-judgment interest;

L. An award of exemplary damages against Defendants, as well as attorneys' fees and costs incurred in this action;

M. An award of punitive and exemplary damages against Defendants;

N. A preliminary and permanent injunction against Defendants, and their employees or representatives, and all persons acting in concert or participating with them, pursuant to 35 U.S.C. § 283;

O. To the extent injunctive relief is not awarded, awarding Celgard damages adequate to compensate Celgard for Defendants' future infringement, but in no event less than a reasonable royalty; and

P. Any further relief that this Court deems just and proper.

DATED: August 6, 2020

Respectfully submitted,

By: */s/ Bryan J. Vogel*
Bryan J. Vogel (*pro hac vice*)

ATTORNEYS FOR PLAINTIFF CELGARD, LLC

ROBINS KAPLAN LLP
ATTORNEYS AT LAW
MOUNTAIN VIEW